University of California
College of Agriculture
Agricultural Experiment Station

SEASONAL LABOR NEEDS FOR CALIFORNIA CROPS

MADERA COUNTY

Progress Report No. 20

by

R. L. Adams

Preliminary -- Subject to Correction

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(Farm Labor Survey -- July-December, 1936)

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Seasonal Labor Needs for California Crops

Madera County

Scope of Presentation.-- The following considerations govern the presentation of this progress report:

1. The data are confined to the area indicated above.

2. The data are confined solely to crops, livestock needs being ignored.

3. The findings apply only to occasional or seasonal labor requirements as distinguished from labor contributed by farm operators and by workers employed on a year-round or regular basis of employment.

4. Attention is concentrated upon workers required for hand tasks -- planting, thinning, weeding, hoeing, and harvesting -- without including teamsters, tractor drivers, irrigators, and shed packers of vegetables or fruits.

5. The presentation includes the so-called migratory, transient, or roving workers which comprise an important source of help needed in connection with certain tasks and at "peak" times which seasonally arise in connection with many field, truck, and fruit crops commercially produced in California.

6. This report is confined to California's need for seasonal agricultural workers because of the more pressing problems liable to arise in connection therewith. A later study is planned which will deal with other kinds of labor involved in the production of California's many crops.

Crops, Acreages, and Production.-- The basis used in calculating occasional or seasonal need for labor, other than that furnished by farm operators and regularly employed workers, appears as table 1.

TABLE 1

Basis for Calculating Seasonal Labor Requirements
Madera County

Crop	Acreage	Production
Field crops:		
Alfalfa	5,095	30,570 tons
Beans*	40	30 tons
Cotton	24,300	25,513 bales †
Grain -- barley	72,580	54,430 tons
oats	320	160 tons
wheat	24,300	6,075 tons
Grain hay*	700	700 tons
Onions and garlic*	40	300 tons
Potatoes*	90	560 tons
Sorghums for grain	760	570 tons

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Table 1 continued.

Crop	Acreage	Production
Vegetable and truck crops:		
Lettuce*	20	2,500 crates
Melons -- cantaloupes*	70	10,500 crates
miscellaneous*	80	57,600 melons
Tomatoes*	120	1,200 tons
Fruit and nut crops:		
Almonds	295	47 tons
Apples*	81	267 tons
Apricots	953	250 tons (dry weight) dried ∓
Figs	1,279 ∮	100 tons (dry weight) dried
Grapes -- raisin varieties		
Thompson	10,419	
Muscat	1,163	
Sultana	326	4,260 tons raisins (dry weight)
Zante	203	1,500 tons wine varieties shipped
miscellaneous table varieties	17	580 tons table varieties shipped
		52,150 tons to wineries
Malaga	585	
miscellaneous wine varieties	53	
	3,001	
Nectarines	85	20 tons (dry weight) dried
Olives	502	473 tons for canning 69 tons not for canning } 542 tons total ¶
Peaches -- clingstones	516	3,100 tons (fresh weight)
freestones	818	4,000 tons (fresh weight)
Plums	206	618 tons
Prunes*	37	
Walnuts*	11	

* Acreage or production small -- Use of seasonal labor inconsequential and hence ignored.

† Data from California Cooperative Crop Reporting Service. Final California cotton report for the 1935 crop. Sacramento, May 26, 1936 - 1p.

∓ Drying ratios: Apricots - 5½ to 1
Peaches - 5½ to 1
Raisins - 4 to 1

∮ Includes: Calimyrna - 838 acres
Adriatic - 314 acres
miscellaneous - 126 acres

¶ Olive production is an estimate by California Olive Association for 1935 Crop.

Operations Requiring Seasonal Labor and Times of Need.-- Farm operations requiring the use of seasonal or occasional labor for the various crops raised in Madera County are indicated in table 2. This tabulation does not include the employing of shed workers needed to wash, pack, and prepare various commodities for shipping and marketing.

Crop	Acreage	Production
Vegetable and truck crops:		
Lettuce*	20	2,800 crates
Melons -- cantaloupes*	70	10,500 crates
miscellaneous*	80	87,600 melons
Tomatoes*	120	1,200 tons
Fruit and nut crops:		
Almonds	286	47 tons
Apples*	81	267 tons
Apricots	853	280 tons (dry weight) dried ¶
Figs	1,279 ¢	100 tons (dry weight) dried
Grapes -- raisin varieties		
Thompson	10,419	
Muscat	1,163	
Sultana	358	4,250 tons raisins (dry weight)
Zante	202	1,500 tons wine varieties shipped
miscellaneous	17	880 tons table varieties shipped
table varieties		82,150 tons to wineries
Malaga	885	
miscellaneous	55	
wine varieties	3,001	
Nectarines	86	80 tons (dry weight) dried
Olives	802	473 tons for canning 69 tons not for canning } 542 tons total ¶
Peaches -- clingstones	816	3,100 tons (fresh weight)
freestones	818	4,000 tons (fresh weight)
Plums	206	818 tons
Prunes*	37	
Walnuts*	11	

* Acreage or production small -- Use of seasonal labor inconsequential and hence ignored.

+ Data from California Cooperative Crop Reporting Service. Final California cotton report for the 1938 crop. Sacramento, May 26, 1938 - 1p.

Drying ratios: Apricots - 3½ to 1
Peaches - 5½ to 1
Raisins - 4 to 1

¢ Includes: Oakhurst - 858 acres
Madera - 314 acres
Miscellaneous - 126 acres

¶ Olive production is an estimate by California Olive Association for 1938 crop.

Operations Requiring Seasonal Labor and Times of Year when Farm operations requiring the use of seasonal or occasional labor for the various crops raised in Madera County are indicated in table 2. This tabulation does not include the sorting of dried workers needed to work, pack, and prepare various commodities for shipping and marketing.

TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Madera County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Field crops:				
Alfalfa	Mowing (5 cuttings)	April 20-30 -- 30 per cent of acreage		8 acres
	Raking	May 1-31 -- 90 per cent of acreage		16 acres
	Shocking by hand	June 1-30 -- 90 per cent of acreage		6.5 acres
		July 1-31 -- 90 per cent of acreage	50	
		August -- two-thirds of acreage		
		September -- two-thirds of acreage		
		October -- two-thirds of acreage		
	Stacking (two-thirds of crop)	May -- 20 per cent of job		
		June -- 20 per cent of job		
		July -- 20 per cent of job		
		August -- 13 per cent of job	60	3.5 tons
		September -- 13 per cent of job		
		October -- 13 per cent of job		
	Baling (one-third of crop)	May -- 20 per cent of job		
		June -- 20 per cent of job		
		July -- 20 per cent of job		
		August -- 13 per cent of job	50	5.0 tons
		September -- 13 per cent of job		
		October -- 13 per cent of job		
Cotton	Chopping	May -- two-thirds of job		
		June -- one-third of job	100	2.5 acres
	Weeding (hoeing)	June 1-30 -- 50 per cent of acreage		
		July 1-31 -- 50 per cent of acreage	100	10 acres
	Irrigating -- 4 times	July -- one-third of job		
		August -- one-third of job	50	5 acres
		September -- one-third of job		
	Picking*	September 15-30 -- 2.2 per cent of crop		
		October 1-31 -- 36.3 per cent of crop	100	250 pounds seed cotton
		November 1-30 -- 34.9 per cent of crop		
		December 1-31 -- 12.0 per cent of crop		
		January 1-31 -- 9.6 per cent of crop	100	200 pounds seed cotton
		February 1-28 -- 5.0 per cent of crop		

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TABLE 5

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Modern County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Field crops:				
Alfalfa	Mowing (6 cuttings)	April 20-30 -- 30 per cent of acreage		8 acres
	Raking	May 1-31 -- 50 per cent of acreage		10 acres
	Shocking by hand	June 1-30 -- 80 per cent of acreage		6.5 acres
		July 1-31 -- 50 per cent of acreage	50	
		August -- two-thirds of acreage		
		September -- two-thirds of acreage		
		October -- two-thirds of acreage		
	Stacking (two-thirds of crop)	May -- 20 per cent of job		
		June -- 20 per cent of job		
		July -- 20 per cent of job	60	3.5 tons
		August -- 15 per cent of job		
		September -- 15 per cent of job		
		October -- 15 per cent of job		
	Baling (one-third of crop)	May -- 20 per cent of job		
		June -- 20 per cent of job		
		July -- 20 per cent of job	50	3.0 tons
		August -- 15 per cent of job		
		September -- 15 per cent of job		
		October -- 15 per cent of job		
Cotton	Chopping	May -- two-thirds of job	100	8.5 acres
		June -- one-third of job		
	Weeding (hoeing)	June 1-30 -- 50 per cent of acreage	100	10 acres
		July 1-31 -- 50 per cent of acreage		
	Irrigating -- 4 times	July -- one-third of job		
		August -- one-third of job	50	5 acres
		September -- one-third of job		
	Picking-	September 15-30 -- 2.2 per cent of crop		250 pounds seed cotton
		October 1-31 -- 38.8 per cent of crop	100	
		November 1-30 -- 34.3 per cent of crop		
		December 1-31 -- 12.0 per cent of crop		
		January 1-31 -- 9.6 per cent of crop	100	300 pounds seed cotton
		February 1-28 -- 3.0 per cent of crop		

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grain	Harvesting with combine	June 1-30 -- 40 per cent of acreage July 1-31 -- 40 per cent of acreage August 1-15 -- 20 per cent of acreage	75	7 acres (in 12 hours)
Sorghums for grain	Cutting by hand	September -- 20 per cent of acreage October -- 60 per cent of acreage November -- 20 per cent of acreage	50	0.75 acre
	Threshing	September -- 15 per cent of crop October -- 60 per cent of crop November -- 25 per cent of crop	50	100 sacks of 130 pounds
Fruit and nut crops: Almonds	Knocking	August 15-31 -- one-third of crop September 1-30 -- two-thirds of crop	50	0.25 ton
	Hulling (by machine)	August 15-31 -- one-third of crop September 1-30 -- two-thirds of crop	50	500 pounds
Apricots	Pruning	November 15-30 -- 5 per cent of job December 1-31 -- 40 per cent of job January 1-31 -- 45 per cent of job February 1-28 -- 10 per cent of job	50	One-sixth acre
	Brush disposal	December 1-31 -- 40 per cent of acreage January 1-31 -- 45 per cent of acreage February 1-28 -- 10 per cent of acreage March 1-15 -- 5 per cent of acreage	50	2.5 acres
	Thinning (by hand) 50 per cent of acreage	April 15-30 -- all of job	90	0.2 acre
	Picking	June 24-30 -- one-third of crop July 1-10 -- two-thirds of crop	100	1,750 pounds
	Cutting for drying (practically all dried)	June 24-30 -- one-third of job July 1-10 -- two-thirds of job	100	750 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grain	Harvesting with combine	June 1-30 -- 40 per cent of acreage July 1-31 -- 40 per cent of acreage August 1-15 -- 20 per cent of acreage	75	7 acres (in 12 hours)
Sorghums for grain	Cutting by hand	September -- 20 per cent of acreage October -- 60 per cent of acreage November -- 20 per cent of acreage	50	0.75 acre
	Threshing	September -- 15 per cent of crop October -- 60 per cent of crop November -- 25 per cent of crop	80	100 sacks of 130 pounds
Fruit and nut crops: Alfonds	Knocking	August 15-31 -- one-third of crop September 1-30 -- two-thirds of crop	80	0.25 ton
	Hulling (by machine)	August 15-31 -- one-third of crop September 1-30 -- two-thirds of crop	80	500 pounds
Apricots	Pruning	November 15-30 -- 8 per cent of job December 1-31 -- 40 per cent of job January 1-31 -- 45 per cent of job February 1-28 -- 10 per cent of job	80	One-sixth acre
	Brush disposal	December 1-31 -- 40 per cent of acreage January 1-31 -- 45 per cent of acreage February 1-28 -- 10 per cent of acreage March 1-15 -- 5 per cent of acreage	80	2.5 acres
	Thinning (by hand). 80 per cent of acreage	April 15-30 -- all of job	90	0.2 acre
	Picking	June 24-30 -- one-third of crop July 1-10 -- two-thirds of crop	100	1,750 pounds
	Cutting for drying (practically all dried)	June 24-30 -- one-third of job July 1-10 -- two-thirds of job	100	750 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Apricots (cont.)	Other dry yard work	June 24-30 -- one-third of job July 1-15 -- two-thirds of job	50	11 man-hours per fresh ton
Figs	Picking up for drying (all varieties)	August 15-31 -- one-third of crop September 1-30 -- two-thirds of crop	100	0.25 ton
	Drying, fumigating, sorting, etc.	August 15-31 -- one-fourth of job September 1-30 -- three-fourths of job	80	40 man-hours per dry ton
Grapes	Pruning -- Thompson, Sultana, and Zante	December 15-31 -- 20 per cent of acreage January 1-31 -- 40 per cent of acreage February 1-28 -- 30 per cent of acreage March 1-15 -- 10 per cent of acreage	90	0.5 acre
	Wrapping (or tying) Thompson, Sultana, and Zante	December 15-31 -- 15 per cent of job January 1-31 -- 40 per cent of job February 1-28 -- 30 per cent of job March 1-15 -- 15 per cent of job	50	1.5 acres
	Pruning (other varieties)	December 15-31 -- 20 per cent of acreage January 1-31 -- 40 per cent of acreage February 1-28 -- 30 per cent of acreage March 1-15 -- 10 per cent of acreage	90	0.66 acre
	Burning brush	January 1-31 -- 40 per cent of job February 1-28 -- 40 per cent of job March 1-15 -- 20 per cent of job	50	5.0 acres
	Hoeing and suckering (shovelling) wine varieties	April -- one-third of job May -- one-third of job June -- one-third of job	90	Total of 10 hours per acre
	Picking for raisins	August 20-31 -- 50 per cent of job September 1-15 -- 50 per cent of job	100	150 trays (22 pounds fresh weight)
	Turning trays	September 1-30 -- 75 per cent of job October 1-10 -- 25 per cent of job	90	1,500 trays

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grapes (cont.)	Rolling trays	September 10-30 -- 50 per cent of job October 1-31 -- 50 per cent of job	75	1,500 trays
	Boxing and hauling	September 15-30 -- one-third of crop October 1-31 -- two-thirds of crop	50	5,000 pounds (dry weight)
	Picking for wineries	August 20-31 -- 10 per cent of crop September 1-30 -- 40 per cent of crop October 1-31 -- 40 per cent of crop November 1-30 -- 10 per cent of crop	100	1.0 ton
	Picking for shipping	August 15-31 -- 3 per cent of job September 1-30 -- 33 per cent of job October 1-31 -- 58 per cent of job November 1-30 -- 6 per cent of job	100	1,500 pounds
Olives	Picking for pickling	September 15-30 -- 15 per cent of job October 1-31 -- 60 per cent of job November 1-21 -- 25 per cent of job	100	400 pounds
	Picking for oil	December -- 25 per cent of job January -- 50 per cent of job February -- 25 per cent of job	100	500 pounds
Peaches (including nectarines)	Pruning	November 15-30 -- 5 per cent of acreage December 1-31 -- 40 per cent of acreage January 1-31 -- 45 per cent of acreage February 1-28 -- 10 per cent of acreage	50	One-sixth acre (15 trees)
	Brush burning	December 1-31 -- 40 per cent of acreage January 1-31 -- 45 per cent of acreage February 1-28 -- 10 per cent of acreage March 1-15 -- 5 per cent of acreage	50	2.5 acres
	Thinning -- clingstones (by hand)	May 1-31 -- 65 per cent of job June 1-30 -- 35 per cent of job	90	One-sixth acre (15 trees)

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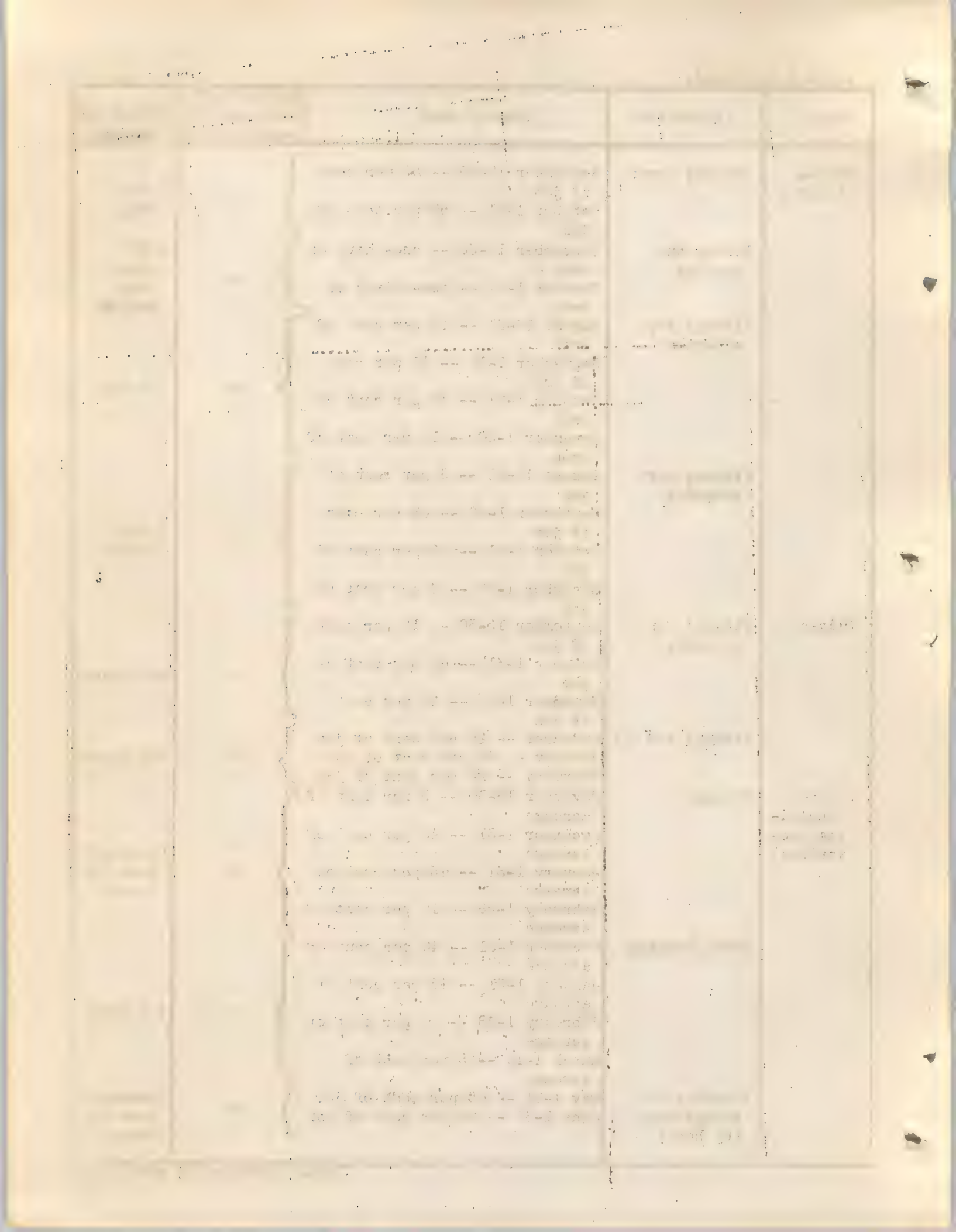


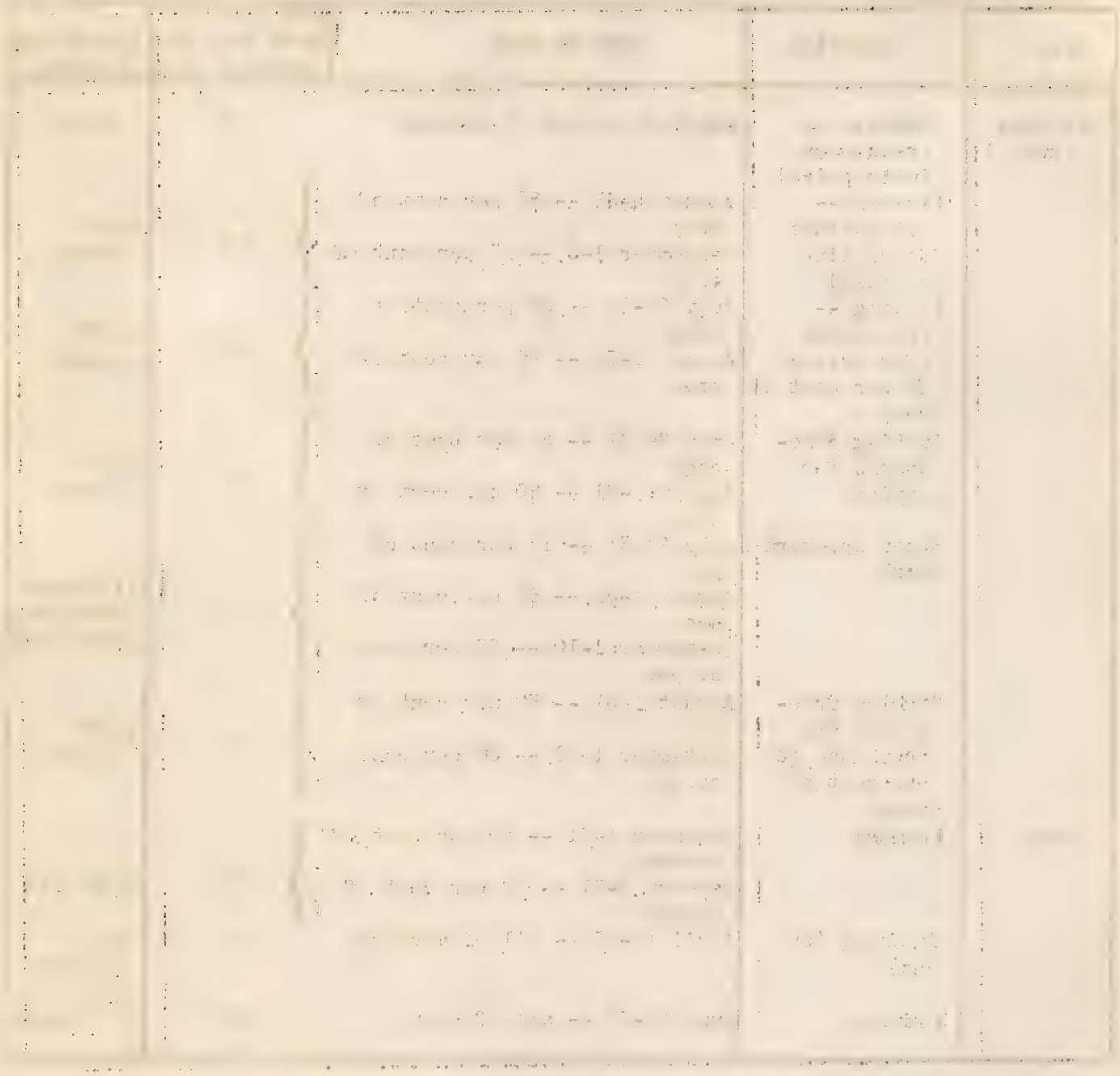
Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Peaches (cont.)	Thinning -- freestones (with poles)	May 1-31 -- all of acreage	90	3 acres
	Picking -- clingstones (including sorting)	August 5-31 -- 85 per cent of crop September 1-5 -- 15 per cent of crop	100	2,000 pounds
	Picking -- freestones (for drying) 70 per cent of crop	July 24-31 -- 20 per cent of crop August 1-31 -- 80 per cent of crop	100	2,000 pounds
	Cutting freestones for drying	July 24-31 -- 20 per cent of crop August 1-31 -- 80 per cent of crop	90	2,000 pounds
	Other dry-yard work	July 24-31 -- 15 per cent of job August 1-31 -- 65 per cent of job September 1-10 -- 20 per cent of job	50	11.5 man-hours per fresh ton†
	Picking freestones for fresh use (30 per cent of crop)	August 1-31 -- 50 per cent of job September 1-30 -- 50 per cent of job	100	1,200 pounds
Plums	Pruning	December 1-31 -- 50 per cent of acreage January 1-31 -- 50 per cent of acreage	50	0.25 acre
	Thinning (by hand)	April 15-30 -- all of acreage	100	One-seventh acre
	Picking	June 23-30 -- all of crop	100	800 pounds

* Cotton picking by months based on Cotton Production in the United States -- Crop of 1935. U.S. Department of Commerce, Bureau of the Census.

† From Christie, A. W. and L. C. Barnard. The principles and practice of sun-drying fruit. California Agr. Exp. Sta. Bul. 388:40-60. 1925.

Findings of Seasonal Labor Needs.-- Details and summaries of seasonal labor requirements of Madera County agriculture are presented as table 3. The "size of task" are figures drawn from table 1, in terms of either acreage or output in tons, crates, boxes, or whatever unit is commonly used. The "output per man-day" is an average figure for the entire acreage or output figured in crates, hampers, boxes, or other units as indicated in the table. If the work is of a nature that requires a crew, different members of which perform different tasks, then the average shown is per man based on the entire crew. Length of day is 9 hours, November to February; 10 hours, March to October; unless otherwise stated. Wide variations in output occur between farm and farm, field and field, and season and season, because of differences in soil types, climatic conditions, weeds, yields, and other factors influencing the



amount of work that a laborer can perform in a given day. Moreover, the basis of output is a mature, experienced male worker without reference to use of women, children, and more or less inexperienced help that is sometimes used in connection with certain of the tasks requiring use of seasonal workers. The column headed "available days" reflects (a) limitations set from the period within which the work must be performed because of the nature of the task, such as transplanting, thinning, weeding, and cutting, and (b) available days as determined by weather conditions, inclement weather reducing the number of days when a required task can be performed. The "required number of individuals" is given in terms of workers as noted above in connection with "output per man-day."

It is probable that the estimated number of workers required, as recorded in table 3, will often be too low, for the reason that "peaks" frequently occur, during which an unusually large proportion of the job is done in a very short period. This would naturally require a much greater number of workers than when the work is spread over a longer period, even though the total amount of labor (in man-days) remains the same.

TABLE 3

Seasonal Labor Needs -- Madera County -- by Months and Tasks

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
January	Cotton: Picking	36,735 cwt.	200 pounds	18,368	20	919
	Apricots: Pruning	214 acres †	0.17 acre	1,259	20	63
	Brush disposal	214 acres †	2.5 acres	86	20	5
	Grapes -- Thompson, Sultana, Zante: Pruning	4,336 acres †	0.5 acre	8,732	20	437
	Wrapping or tying	2,426 acres †	1.5 acres	1,618	20	81
	Other varieties: Pruning	1,310 acres †	0.66 acre	1,985	20	100
	All varieties: Brush burning	3,154 acres †	5.0 acres	631	20	32
	Olives: Picking for oil	35 tons	500 pounds	140	20	7
	Peaches and nectarines: Pruning	319 acres †	0.17 acre	1,877	20	94
	Brush burning	319 acres †	2.5 acres	128	20	7
	Plums: Pruning	51 acres	0.25 acre	204	20	11
				35,028	20	1,752 man-months ‡
February	Cotton: Picking	19,140 cwt.	200 pounds	9,570	21	456
	Apricots: Pruning	48 acres †	0.17 acre	283	21	14
	Brush disposal	48 acres †	2.5 acres	20	21	1
	Grapes -- Thompson, Sultana, Zante: Pruning	3,275 acres †	0.5 acre	6,550	21	312
	Wrapping or tying	1,819 acres †	1.5 acres	1,213	21	58
	Other varieties: Pruning	982 acres †	0.66 acre	1,488	21	71
	All varieties: Brush burning	3,153 acres †	5.0 acres	631	21	31
	Olives: Picking for oil	17 tons	500 pounds	68	21	4
	Peaches and nectarines: Pruning	71 acres †	0.17 acre	418	21	20
	Brush burning	71 acres †	2.5 acres	29	21	2
				20,270	21	966 man-months ‡
March	Apricots: Brush disposal	24 acres †	2.5 acres	10	10	1 (From 1-15)
	Grapes -- Thompson, Sultana, Zante: Pruning	1,092 acres †	0.5 acre	2,184	10	219 (From 1-15)
	Wrapping or tying	910 acres †	1.5 acres	607	10	61 (From 1-15)
	Other varieties: Pruning	328 acres †	0.66 acre	497	10	50 (From 1-15)
	All varieties: Brush burning	1,577 acres †	5.0 acres	316	10	32 (From 1-15)
	Peaches and nectarines: Brush burning	36 acres	2.5 acres	15	21	1
				3,629	21	173 man-months ‡

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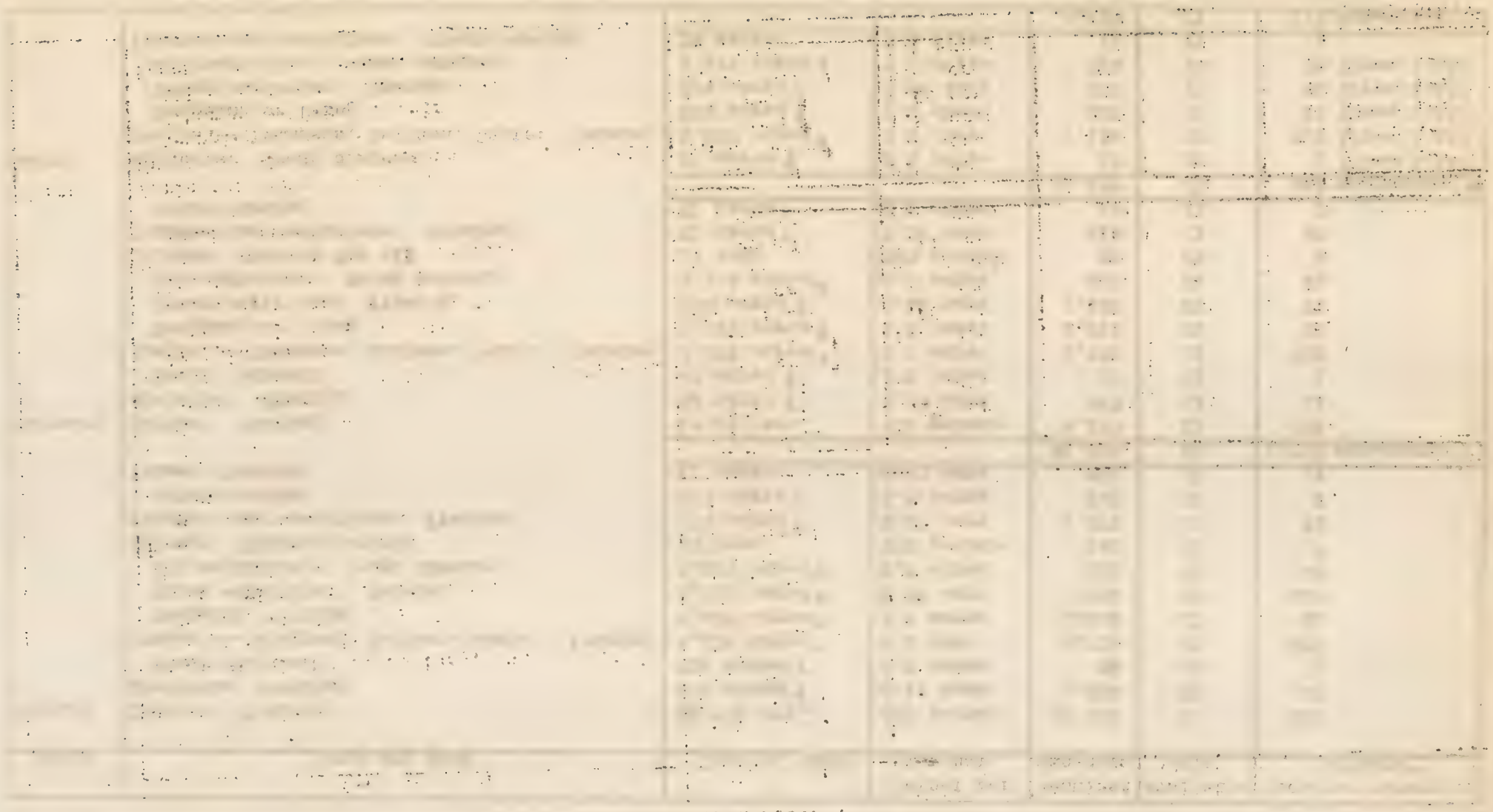

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
April	Alfalfa: Mowing	764 acres †	8 acres	96	8	12 (From 20-30)
	Raking	764 acres	16 acres	48	8	6
	Shocking by hand	764 acres	6.5 acres	118	8	15
	Apricots: Thinning by hand	133 acres †	0.2 acre	665	12	50 (From 15-30)
	Grapes -- wine varieties: Hoeing and suckering	901 acres †	1.0 acre	901	24	38
	Plums: Thinning by hand	206 acres	0.14 acre	1,472	12	123 (From 15-30)
				3,300	24	138 man-months ≠
May	Alfalfa: Mowing	2,293 acres †	8 acres	287	26	12
	Raking	2,293 acres †	16 acres	144	26	6
	Shocking	2,293 acres †	6.5 acres	353	26	14
	Stacking	2,446 tons †	3.5 tons	699	26	27
	Baling	1,019 tons †	5.0 tons	204	26	8
	Cotton: Chopping	16,200 acres	2.5 acres	6,480	26	250
	Grapes -- wine varieties: Hoeing and suckering	900 acres †	1.0 acre	900	26	35
	Peaches -- clingstone: Thinning	302 acres †	0.17 acre	1,777	26	69
	freestone: Thinning with poles	736 acres †	3.0 acres	246	26	10
				11,090	26	427 man-months ≠
June	Alfalfa: Mowing	2,293 acres †	8 acres	287	26	12
	Raking	2,293 acres †	16 acres	144	26	6
	Shocking by hand	2,293 acres †	6.5 acres	353	26	14
	Stacking	2,446 tons †	3.5 tons	699	26	27
	Baling	1,019 tons †	5.0 tons	204	26	8
	Cotton: Chopping	8,100 acres	2.5 acres	3,240	26	125
	Weeding (hoeing)	12,150 acres	10 acres	1,215	26	47
	Grain: Harvesting with combine	30,060 acres †	7 acres ♂	4,295	26	166
	Apricots: Picking	458 tons ¶	1,750 pounds	524	5	105 (From 24-30)
	Cutting for drying	458 tons ¶	750 pounds	1,222	5	245 (From 24-30)
	Other dry-yard work	229 tons †¶	"	252	5	51 (From 24-30)
	Grapes -- wine varieties: Hoeing and suckering	900 acres †	1.0 acre	900	26	35
	Peaches -- clingstone: Thinning	162 acres †	0.17 acre	953	26	37 (From 23-30)
	Plums: Picking	618 tons	800 pounds	1,545	6	258 (From 23-30)
				15,833	26	609 man-months ≠

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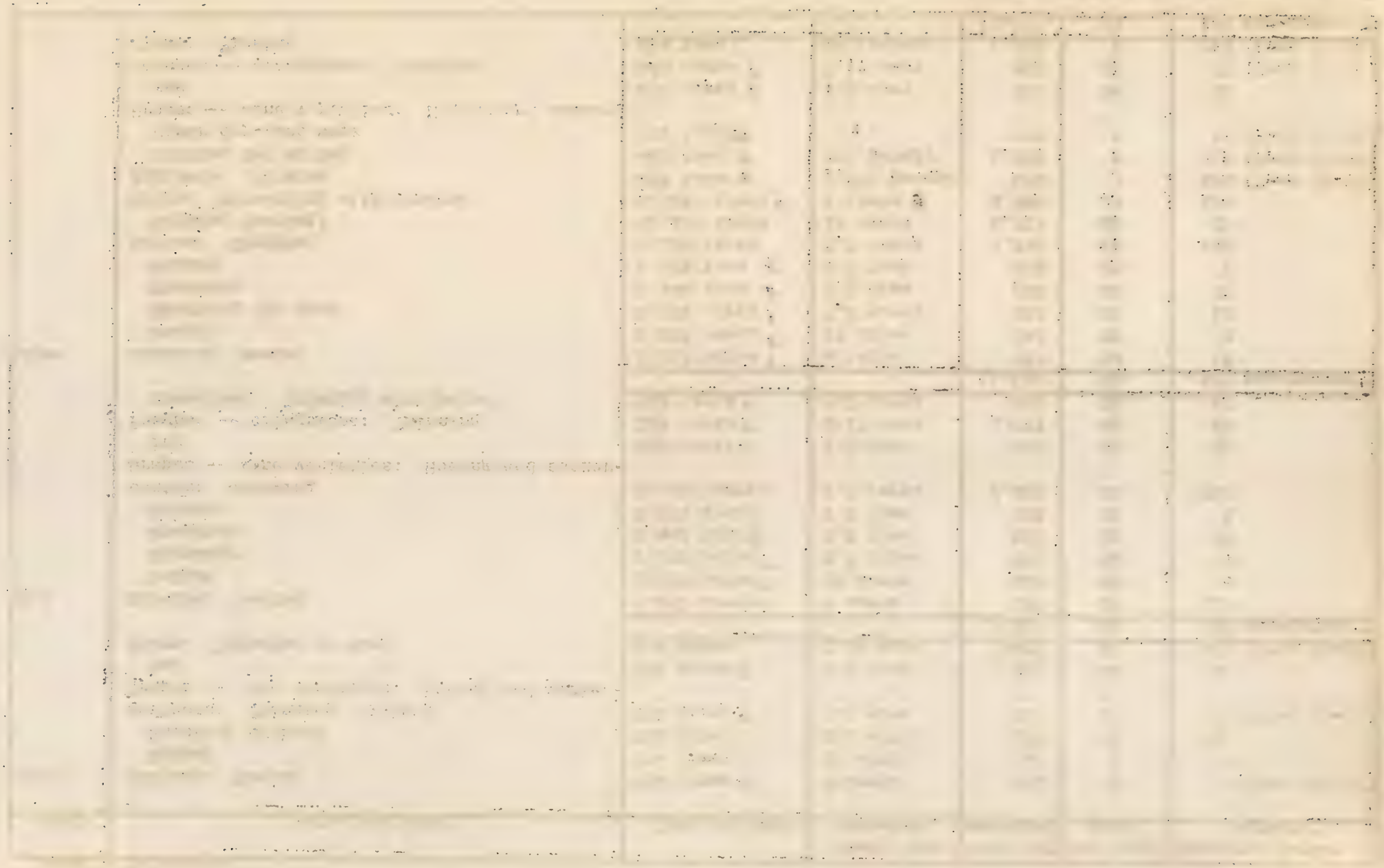


Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
July	Alfalfa: Mowing	2,293 acres †	8 acres	287	26	12
	Raking	2,293 acres †	16 acres	144	26	6
	Shocking by hand	2,293 acres †	6.5 acres	353	26	14
	Stacking	2,446 tons †	3.5 tons	699	26	27
	Baling	1,019 tons †	5.0 tons	204	26	8
	Cotton: Weeding (hoeing)	12,150 acres	10 acres	1,215	26	47
	Irrigating	12,150 acres** †	5 acres	3,240	26	125
	Grain: Harvesting by combine	30,060 acres †	7 acres ♂	4,295	26	166
	Apricots: Picking	916 tons ♀	1,750 pounds	1,047	8	131 (From 1-10)
	Cutting for drying	916 tons ♀	750 pounds	2,443	8	306 (From 1-10)
	Other dry-yard labor	458 tons ♂♀	〃	504	13	39 (From 1-15)
	Peaches -- freestone: Picking for drying	560 tons	1.0 ton	560	6	94 (From 24-31)
	Cutting for drying	504 tons †	1.0 ton	504	6	84 (From 24-31)
	Other dry-yard work	210 tons †	〃	242	6	41 (From 24-31)
				15,737	26	606 man-months ≠
August	Alfalfa: Mowing	1,698 acres †	8 acres	213	26	9
	Raking	1,698 acres †	16 acres	107	26	5
	Shocking by hand	1,698 acres †	6.5 acres	262	26	11
	Stacking	1,590 tons †	3.5 tons	455	26	18
	Baling	662 tons †	5.0 tons	133	26	6
	Cotton: Irrigating	12,150 acres** †	5.0 acres	3,240	26	125
	Grain: Harvesting by combine	15,030 acres †	7 acres ♂	2,148	13	166 (From 1-15)
	Almonds: Knocking	8 tons †	0.25 ton	32	13	3 (From 15-31)
	Hulling (by machine)	8 tons †	0.25 ton	32	13	3
	Figs: Picking up for drying	33 tons	0.25 ton	132	13	11 (From 15-31)
	Drying, sorting, fumigating, etc.	20 tons †	〃	80	13	7 (From 15-31)
	Grapes: Picking for raisins	8,520 tons	150 trays	5,164	9	574 (From 20-31)
	Picking for wineries	5,215 tons	1.0 ton	5,215	9	580 (From 20-31)
	Picking for shipping	62 tons	1,500 pounds	83	13	7 (From 15-31)
	Peaches -- clingstone: Picking (including sorting)	2,635 tons †	1.0 ton	2,635	22	120 (From 5-31)
	freestone: Picking for drying	2,240 tons	1.0 ton	2,240	26	87
	Cutting for drying	2,016 tons †	1.0 ton	2,016	26	78
	Other dry-yard work	910 tons †	〃	1,046	26	41
	Picking for fresh use	600 tons	1,200 pounds	1,000	26	39
				26,233	26	1,009 man-months ≠

Table continued on next page.

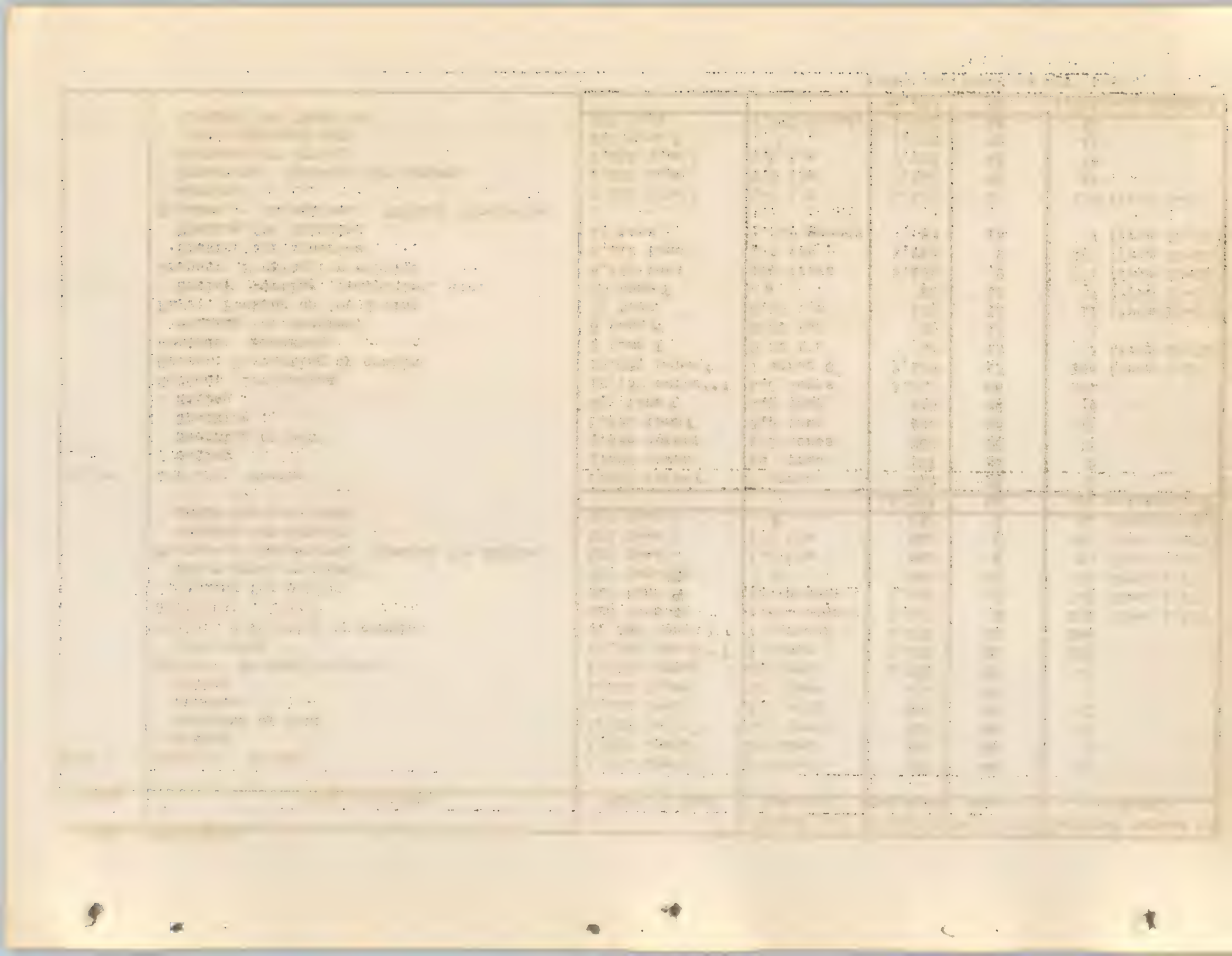


Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required Number of workers*
September	Alfalfa: Mowing	1,698 acres †	8 acres	213	26	9
	Raking	1,698 acres †	16 acres	107	26	5
	Shocking by hand	1,698 acres †	6.5 acres	262	26	11
	Stacking	1,590 tons †	3.5 tons	455	26	18
	Baling	662 tons †	5 tons	133	26	6
	Cotton: Irrigating	12,150 acres** †	5.0 acres	3,240	26	125
	Picking	7,574 cwt. ††	250 pounds	3,030	13	234 (From 15-30)
	Sorghum for grain: Cutting by hand	76 acres †	0.75 acre	102	26	4
	Threshing	658 sacks †	100 sacks	7	26	1
	Almonds: Knocking	16 tons †	0.25 ton	64	26	3
	Hulling (by machine)	16 tons †	0.25 ton	64	26	3
	Figs: Picking up for drying	67 tons	0.25 ton	268	26	11
	Drying, sorting, fumigating, etc.	60 tons †	〃	240	26	10
	Grapes: Picking for raisins	8,520 tons	150 trays	5,164	13	398 (From 1-15)
	Picking for wineries	20,860 tons	1.0 ton	20,860	26	804
	Picking for shipping	686 tons	1,500 pounds	915	26	36
	Turning trays	15,552 tons †	1,500 trays	943	26	37
	Rolling trays	6,390 tons †	1,500 trays	388	17	23 (From 10-30)
	Boxing and hauling	710 tons †	2.5 tons	284	13	22 (From 15-30)
	Olives: Picking for canning	71 tons	400 pounds	355	13	28 (From 15-30)
	Peaches -- clingstone: Picking (including sorting)	465 tons †	1.0 ton	465	4	117 (From 1-5)
	freestone: Other dry-yard work	280 tons †	〃	322	8	41 (From 1-10)
	Picking for fresh use	600 tons	1,200 pounds	1,000	26	39
				38,881	26	1,496 man-months ≠
October	Alfalfa: Mowing	1,698 acres †	8 acres	213	23	10
	Raking	1,698 acres †	16 acres	107	23	5
	Shocking by hand	1,698 acres †	6.5 acres	262	23	12
	Stacking	1,590 tons †	3.5 tons	455	23	20
	Baling	662 tons †	5.0 tons	133	23	6
	Cotton: Picking	125,024 cwt.	250 pounds	50,010	23	2,175
	Sorghum for grain: Cutting by hand	228 acres †	0.75 acre	304	23	14
	Threshing	2,631 sacks †	100 sacks	27	23	2

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
October (cont.)	Grapes: Turning trays	3,834 tons †	1,500 trays	233	8	30 (From 1-10)
	Rolling trays	6,390 tons †	1,500 trays	388	23	17
	Boxing and hauling	1,420 tons †	2.5 tons	568	23	25
	Picking for wineries	20,860 tons	1.0 ton	20,860	23	907
	Picking for shipping	1,207 tons	1,500 pounds	1,610	23	70
	Olives: Picking for canning	284 tons	400 pounds	1,420	23	62
				76,590	23	3,330 man-months ≠
November	Cotton: Picking	120,204 cwt.	250 pounds	48,082	23	2,091
	Sorghum for grain: Cutting by hand	76 acres †	0.75 acre	102	23	5
	Threshing	1,096 sacks †	100 sacks	11	23	1
	Apricots: Pruning	24 acres †	0.17 acre	142	23	7
	Grapes: Picking for wineries	5,215 tons	1.0 ton	5,215	23	227
	Picking for shipping	125 tons	1,500 pounds	167	23	8
	Olives: Picking for canning	118 tons	400 pounds	590	16	37 (From 1-21)
	Peaches and nectarines: Pruning	36 acres †	0.17 acre	212	11	20 (From 15-30)
				54,521	23	2,371 man-months ≠
December	Cotton: Picking	45,930 cwt.	200 pounds	22,965	22	1,044
	Apricots: Pruning	190 acres †	0.17 acre	1,118	22	51
	Brush disposal	190 acres †	2.5 acres	76	22	4
	Grapes -- Thompson, Sultana, Zante: Pruning	2,183 acres †	0.5 acre	4,366	11	397 (From 15-31)
	Wrapping and tying	910 acres †	1.5 acres	607	11	56 (From 15-31)
	Other varieties: Pruning	655 acres †	0.66 acre	993	11	91 (From 15-31)
	Olives: Picking for oil	17 tons	500 pounds	68	22	4
	Peaches and nectarines: Pruning	284 acres †	0.17 acre	1,671	22	76
	Brush burning	284 acres	2.5 acres	114	22	6
	Plums: Pruning	52 acres †	0.25 acre	208	22	10
				32,186	22	1,463 man-months ≠

* On monthly basis unless otherwise noted.

† Estimated portion of the job done by seasonal workers.

≠ It should be noted that this figure, rather than representing the required number of individuals, represents the required man-months of seasonal labor, and is derived by dividing the total number of man-days by the total number of days available for work during the month.

Table continued on next page.

Table 3 continued.

ϕ Rate for a 12-hour day.

¶ Fresh weight.

‖ Drying labor estimated to be as follows:

Apricots	- 11 man-hours per fresh ton
Figs	- 40 man-hours per dry ton
Peaches	- 11.5 man-hours per fresh ton

** The total acreage is irrigated once each month, and one-third of it is irrigated twice each month.

†† Seed cotton -- 1,350 pounds to the bale before the frost and 1,500 pounds after the frost.

TABLE 4

Summary of Seasonal Labor Needs by Months
Madera County
1935

Month	Required man-days of seasonal labor	Available days	Required man-months of seasonal labor
January	35,028	20	1,752
February	20,270	21	966
March	3,629	21	173
April	3,300	24	138
May	11,090	26	427
June	15,833	26	609
July	15,737	26	606
August	26,233	26	1,009
September	38,881	26	1,496
October	76,590	23	3,330
November	54,521	23	2,371
December	32,186	22	1,463
Total	333,298	--	14,340

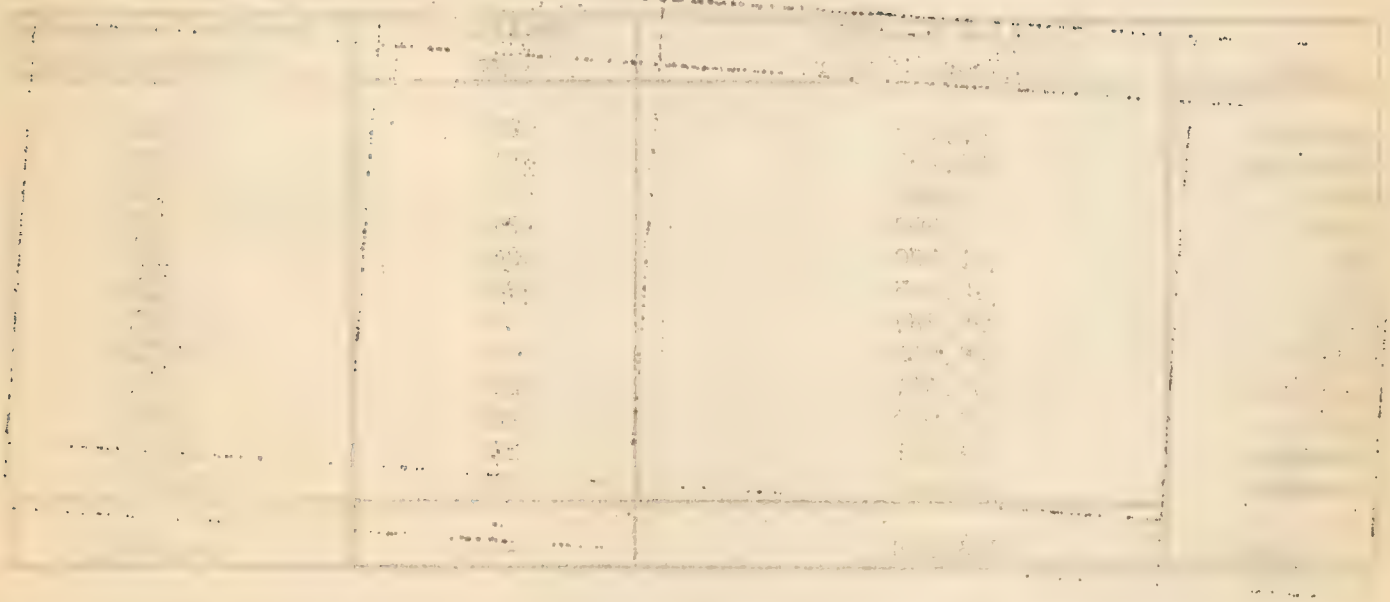
Notes

Notes on Table 2.-- Data concerning "time of need" as shown in this table break down required seasonal labor into the period in which the work is performed in order to permit a subsequent determination of labor needs by months (table 3). Some operations are performed only to a limited extent with seasonal labor. For instance, only about 75 per cent of the labor in harvesting grain is done by seasonal workers. When a job extends over several different months, the proportionate amount for each month is shown.

The amount of work done each month is based on the cropping system followed during 1935. The allotting of amounts of work is based on findings concerning local farm practices, and required time to "make" a crop resulting from inquiry of producers, and records of carlot shipments, the latter proving helpful in fixing dates of planting and of subsequent tasks involved in producing certain crops. Proportionate amounts of output harvested each month were determined from data of local practices with respect to harvesting, and from carlot shipments of perishable products. Records of truck shipments were also used when available.

Notes on Table 3.-- Table 3 is the condensed summary of labor needs as worked out for Madera County as a result of findings pertinent to 1935. The data are presented by months with the tasks which were performed in each month indicated by both crop and task. The size of the job was calculated from the data appearing in table 1 (acreage and production) and table 2 (task, time of performance, and percentage of work pertinent to a given month). The output per man-day was calculated as indicated in the foreword presenting table 3. The number of required man-days is a result of dividing the size of task by output per man-day. The available days for the different tasks involve two variables. The first is the number of days when field work is possible because of favorable weather conditions.

The basis for this column was determined from a study of the monthly weather charts of the United States Weather Bureau for the years 1933, 1934, and 1935. These data indicated available days per month as follows (based on a 26-day working month without allowance for holidays):



Month	Available days	Length of work day	Month	Available days	Length of work day
		hours			hours
January	20	9	July	26	10
February	21	9	August	26	10
March	21	10	September	26	10
April	24	10	October	23	10
May	26	10	November	23	9
June	26	10	December	22	9

Source of data: Based on precipitation records of the Madera station of the United States Weather Bureau for the years 1933, 1934, and 1935.

The second factor influencing the number of available days was the size of the job. If the output was only a few cars, then the number of days was limited to the time needed to get out those cars efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the specific number of days was noted. These restrictions are shown in parentheses. For example, in July the picking of apricots was limited to the first ten days of the month, picking peaches to the last week, etc.

The totals of table 3 show the total required man-days of needed seasonal labor, the available days for field work during the month, and the necessary number of men (as defined in the opening paragraph of table 3) required on a monthly basis to care for the tasks ordinarily performed by seasonal workers.

In an area such as Madera County, involving a variety of annual crops, the findings as set forth in this report are bound to fluctuate materially from year to year, because of the market outlook upon what and how much acreage is planted, and when it is planted; because of variable seasonal conditions affecting yields, time of performing operations, and available days; and because of harvesting operations on certain crops being speeded up to supply a good market, or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor.

Month	Available days	Length of work day	Month	Available days	Length of work day
		Hours			Hours
January	20	9	July	26	10
February	21	9	August	28	10
March	21	10	September	28	10
April	24	10	October	23	10
May	28	10	November	28	9
June	26	10	December	22	9